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On the "*montana*" variety of the Common Partridge

by James Harrison

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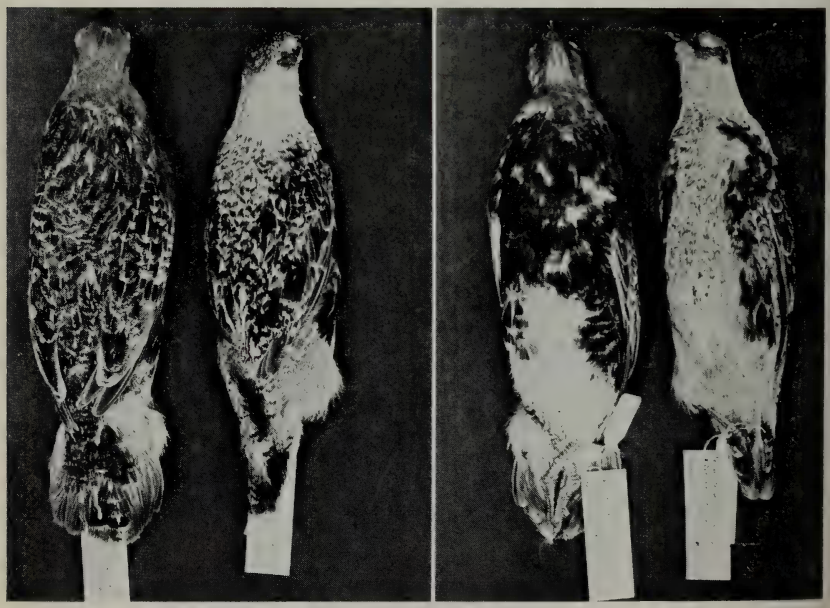
In his account of some mutations occurring in the genera *Alectoris* and *Perdix*, Ash (1966) discussed their genetical implications and stressed the fact that such anomalies of plumage could have phylogenetic significance. He also suggested that these mutations may provide evidence of reversal to a primitive type in accordance with my own findings on some recurring varieties in the Anatidae (Harrison 1953). The principle postulated that such mutations are usually the result of the recombination of recessive genes and that these may lie dormant for a very long time in the gene pool



Figs. I and II.
The Mountain or Cheshire Partridge, *Perdix perdix perdix* var "*montana*", on left, adult female, on right, juvenile male.

of a species before a mating favouring the establishment of a dominant recessive character occurs. That there is this hereditary factor in most cases of a recurring mutation is evident from its occurrence in certain restricted localities. This aspect of the problem is also emphasised in Ash's paper (*loc. cit.*) Furthermore, by the very nature of a recessive, it would be difficult to be sure that a mutation was really eliminated from any particular locality in which it had once occurred. This is particularly so in the case of the Grey Partridge *Perdix perdix*, which is less given to moving away from any district in which it is, than, for example is the Red-legged Partridge *Alectoris rufa*.

Some references additional to those given by Ash (*loc. cit.*) may not be without interest insofar as *Perdix p.* "*montana*" is concerned.

One of these is a publication by Ogilvie-Grant (1895) especially as this contains a colour plate of this striking variety and depicts the extreme rufous phase of the mutation. This same plate is reproduced by Hachisuka (1928) and it is worth quoting his comments in this connection . . . "one of the best known examples is the Mountain Partridge, (*Perdix montana*) which appears sporadically in the breeding places of the Grey Partridge, *Perdix perdix*, in England. We do not know how this character is acquired, or whether it can be transmitted to the next generation." However, he later refers to "juvenile stages" amongst specimens in the British Museum. Latham (1823) referred to the variety as the "Cheshire Partridge", and specimens were shown in 1915 by Ogilvie-Grant and Rothschild at the meeting of the British Ornithologists' Club on 15th January of that year.

The present communication concerns two specimens, one of which was shot at Kennardington in Kent by Mr. Hugh Ticehurst, on 10th September, 1945; this is a juvenile male. The other was shot by Mr. E. D. Cutting on the East Guldeford marshes on the Kent/Sussex border, at the end of January, 1967. The two localities are comparatively close to each other; this latter bird is an adult female. As can be seen from the accompanying photographs, the birds are of the same type and are in effect an admixture of the rufous phase with an excess of melanin. This similarity is what one would expect as the localities are so close to one another, for the occurrence of the mutation would, of course, be favoured by this proximity.

The examination of these two specimens brought to light certain characters which made it desirable to examine the series of this variation in the collections at the British Museum (Natural History). This series is represented by 15 specimens—three adult males, three adult and one juvenile female and four unsexed birds. The general colour shown by the birds ranges from a very dark rich maroon to a rather pale rufous individual.

The character which presented itself as one of special interest in the two recent specimens referred to above, was the anomalous condition of the median wing-coverts. These had undergone some modification from the accepted pattern peculiar to, and distinguishing the two sexes of the species.

Ogilvie-Grant (1895 Fig. 1.) shows the characters upon which the sexual dimorphism is based in *Perdix perdix*. The modification observed in the two recent specimens constitutes therefore a disturbance of secondary sexual characters, and anomalies of sexual dimorphism occur in many different species of birds.

The Kennardington bird was prepared and sexed by the late Mr. George

Bristow, a professional taxidermist, who in my experience was careful and reliable in the sexing of specimens, and who could be depended upon not to enter a definite sex upon the data label in cases where there was any doubt. The East Guldeford specimen was prepared and sexed by myself, and presented the anatomical characters of a normal female. The size of the ovary is indicated on the small tag label which is attached for such purpose at the time of skinning, and was in the quiescent stage.

The median wing-coverts of the former bird show a fairly thin mesial shaft-stripe but depart from the accepted female pattern by having a light tip to the feather. The latter has a rather thicker mesial shaft-stripe with a fairly pronounced light tip to the feather, but it lacks the light transverse barring which characterises the female type of median wing-covet. These differences can be seen in the plate. (Fig. 1.).

Let us now consider the anomalous characters which the British Museum series show:—

Out of these 15 specimens there are only four which present normal sexual dimorphism insofar as the median wing-coverts are concerned. This high proportion of abnormal birds is surprising, and shows, I think a certain instability of the genetic constitution which appears to have resulted from the incidence of the colour aberration, although as we have already seen, anomalies can occur in normally plumaged individuals. In Ogilvie-Grant's anomalous specimen (*vide supra*) of normal plumage otherwise, the gynandromorphism is expressed in one and the same feather.

In the British Museum series there are no fewer than two bilateral gynandromorphic individuals. In one of these this condition exists on the two different sides of the bird; its origin was from the Rothschild collection (B.M. No. 1939: 12: 9: 3565). The only datum is that it was obtained in Norfolk—the right wing-coverts are female in character and the left male. The second individual is of continental origin with scanty data, and the gynadromorphism presents itself as an admixture of male and female wing-coverts on both sides, the specimen being one of the unsexed group. One can summarise the variations seen in this series briefly as follows:—

♂♂ 7
- (a) No anomalies (three)
- (b) Normal medial shaft-stripe with very small pale spot at tip (three-two of which are the subjects of gynandromorphism)
- (c) Greatly attenuated to almost complete suppression of medial shaft-stripe the presence of which is indicative of the male of the species in normal individuals (seven)

♀♀ 3
- (a) No anomalies (one)
- (b) Feathers with pale terminal tips varying in extent but sometimes large and vermiculated dusky (one)
- (c) General absence of pale transverse barring which is the pattern of the normal female (one)

oo 4
- (a) Predominantly ♀ type, but lacking the pale transverse barring (three)
- (b) Gynadromorphism (one)

Out of the series of 15 birds only three ♂♂ and one ♀ show no anomalies.

It is perhaps worth stressing here that in all specimens collected for study, where it is possible, a sketch of the gonads should be made; this is of the utmost value.

At Dr. Ash's suggestion I have picked out at random 17 specimens from my own collection from various European countries, including seven from the British Isles, two of the nominate race, and six of the form *P. p. sphagnetorum* from Holland, one from Czecholsovakia and two from Switzerland. While, of course, this sample cannot be regarded as statistically significant, its comparison with the series of mutants is nevertheless of interest, and it was all prepared by experienced workers.

Those from the British Isles were, for the most part, prepared and sexed by myself; one, however, was done by Mr. A. H. Bishop, who was for many years taxidermist to the British Museum, Natural History.

The Swiss and Czechoslovakian specimens were prepared and sexed by the late Ernst Flükiger, while the Dutch examples were investigated by Mr. P. A. Hens and myself.

As selected there was only one in which the sex was in doubt, which was noted as a ? ♀; Flükiger was of course a very experienced professional taxidermist who was meticulous in observing the conventions of the sexing of specimens, and it is of interest to note that the median wing-coverts of this individual broadly conform to those of the female. In this series the following results can be set out:— of the seventeen specimens nine are immature birds, either full juveniles or birds in their first year. Of these, three are ♂♂ and six ♀♀. Of the eight adults, five are ♂♂ two are ♀♀ and one a ? ♀. Note that juveniles cannot be sexed by this character (median wing-coverts) so these should be deleted unless moult into first winter plumage has started (in which median coverts are replaced at an early stage—all except very late birds by early September). This may account for the two gynandromorph males (b), for the juvenile coverts are rather like those of a female.

♂♂ 8

(a) No anomalies (six)

(b) Gynandromorphism (two), shown in one by an admixture of barred and unbarred feathers, and in the other by some transverse barring on both sides.

♀♀ 8

(a) No anomalies (seven)

(b) Median wing-coverts superficially resembling female type but with only very slight transverse barring (one).

?♀ 1

(a) Gynandromorphic, median wing-coverts on the left side of female type, and those on the right of male type.

From this it is clear, as pointed out by Ash (*in litt.* 27. vi. 67), that the type of the wing-coverts cannot be entirely relied upon to determine the sex in this species. Comparing the two series, however, birds of normal phenotype only show anomalies in three individuals, while in the

''*montana*'' series the number of the anomalous examples was, as we have seen, as high as eleven. It would seem therefore that this particular mutation at any rate amongst the colour aberrations in *Perdix perdix* has a very disturbing effect upon an average character in the sexual dimorphism of the species.

It would also seem possible that the character concerned is very labile, and this view is supported by the fact that, in birds of normal colour, the character shows a degree of variability and indeed of instability. The Partridge is, in fact, a bird of variables, for even the striking chestnut horse-shoe marking on the breast, which of course by itself has no significance as a character in sex differentiation, can be completely absent.

An assessment of the various normal characters and their incidences in this species in both sexes would be of much value and interest.

DISCUSSION

Varieties in birds have always been regarded as curious rather than significant, and as a result of this their potential value to science has been stultified. This view is regrettable, and little endeavour has been made to seek any explanatory basis as to their meaning or purpose in the phenomena observed. Usually such cases are disposed of as due to ''parallel development'', whereas many instances could be due to genetical mechanisms such as are known to account for, for example, albinism and other colour varieties. The true albino which constitutes a pathological state is known to be due to a dominant recessive.

In this connection it is perhaps useful to consider the cases of certain species which exhibit a normal dimorphic morphology. Instances of this phenomenom are provided by the red and the grey phases of the Tawny Owl *Strix aluco* and other owls, the dark and light phases of the Arctic Skua *Stercorarius parasiticus*, the dark and normal phases of Montagu's Harrier *Circus pygargus*, and of course the striking melanistic form of the eastern Black-headed Shrike, *Lanius schach*, and many more instances could be mentioned.

It could well be that such cases, in which a melanistic phase is a normality, represent a persistence of a condition which may have been very much more common at some earlier stage in the evolution of the species, but which over the aeons of time has been selected against and which now occurs only as a comparatively rare genetic recombination.

It seems reasonable to ask—did *Perdix perdix* during the course of its evolution possibly have a rufous and a melanistic form?

Needless to say were it possible to carry out breeding experiments on this variety, both by pairing the mutations *inter se*, and by crossing the variety with normally plumaged individuals, the nature of the mutation could be determined. That the variety is fertile is obvious since immature birds have been obtained as specimens, though the fertility rate could well show some changes.

The writer has no doubt whatsoever that this mutation will recur again and again in the favoured localities, for once the genes have occurred in the species group they will continue to be carried, if only to be exposed by recombination sporadically and possibly also at very infrequent intervals.

ACKNOWLEDGMENTS

My first indebtedness is to Mr. E. D. Cutting who sent me the 1967 specimen. The Kennardington specimen came to me through the kindness of Dr. N. F. Ticehurst, while for the series of Dutch specimens I am indebted to Mr. P. A. Hens. I am also grateful to Dr. Jeffery Harrison with whom I have discussed the implications of the cases, and who read through the M.S. Dr. J. S. Ash has also been kind enough to read the typescript and proffer valuable suggestions and comments. Mr. F. C. Sawyer was good enough to establish a reference for me. I am most grateful to Dr. Pamela Harrison for the photographs of the specimens, and to Mr. J. D. Macdonald, of the British Musuem (Natural History), for making the series of this mutation available to me for study.

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On the nominate race of *Pogonocichla stellata* (Vieillot)

by P. A. Clancey

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The nominate race of the Starred Robin *Pogonocichla stellata* (Vieillot), 1818: Plettenberg Bay, southern Cape Province, of southern and eastern Africa, is currently believed to extend from the southern Cape Province north-east to southern Zululand. North of this, in southern Africa, it is replaced by *P. s. lebombo* Roberts, 1935: Ingwavuma, Lebombo Mts., north-eastern Zululand, and *P. s. transvaalensis* (Roberts), 1912: Woodbush Forest, Tzaneen, northern Transvaal. Moreau (1951) recognises only nominate *stellata* and *transvaalensis* in zoogeographical South Africa, placing both *lebombo* and *P. s. chirindensis* (Roberts), 1914: Chirinda Forest, Mt. Selinda, Melsetter district, Rhodesia, as synonyms of the latter. Recently, Ripley (1964), Clancey (1966), and Clancey and Lawson (1967) have reinstated *lebombo* as discrete from *transvaalensis*. As shown by the last named authors, the back is green in *lebombo* as against bronze in *transvaalensis*.

In the southern African populations of this temperate forest element, variation affects the blue-grey of the head, the colour of the mantle, scapulars and rump, the intensity of the yellow of the underside and of the pale areas of the rectrices. Also, in some populations, the outer vanes of the bastard-wing and adjacent greater-coverts are edged with silvery white rather than bluish-grey. A careful study of a panel of 75 specimens of the populations occurring in evergreen forest from about Knysna, in